## REMARKS

Applicants have amended claim 1 to more particularly point out and distinctly claim the subject matter, corrected typographical and grammatical errors in claims 2-5 and 10-17, and added new claim 18. Support for the amendments to the claims can be found throughout the original Specification. Representative examples of the support are listed in Table 1 below:

**Table 1. Support for Recitations in Amended Claims**

| Revised and Added Recitations | Support in the original application |
|---|---|
| **Claim 1:**<br>"said polymerization ... chain structure" | page 9, lines1-3 |
| **Claim 2:**<br>"number" | page 5, lines 18-20 |
| **Claim 3:**<br>"graft ABS ... rubber latex" | claim 3; page 7, lines 18-19 |
| **Claim 3:**<br>"45% or less" | page 16, line 28 |
| **Claim 10:**<br>"blended" | page 2, line 30 |
| **Claim 11:**<br>"a lubricant"<br>"an antioxidant" | page 12, line 11<br>page 12, line 11 |
| **Claim 12:**<br>recited steps | claim 12 |
| **Claim 14:**<br>recited steps | claim 14 |
| **Claim 18:**<br>new claim | page 9, lines 4-5 and page 16, line 28 |

Applicants have amended the Specification and attached herewith a marked-up version and a clean version of a substitute specification. Applicants have also submitted a statement under 37 CFR 1.125.

No new matter has been introduced by the amendments.

Claims 1-18 are currently pending. Reconsideration of the application, as amended, is respectfully requested in view of the remarks below.

Rejection under 35 U.S.C. § 112, second paragraph

The Examiner rejected claims 1-17 as being indefinite on eight different grounds. See the Office Action, pages 3-4. Applicants respectfully traverse each of the grounds below:

(1) The Examiner pointed out that "the term 'heat resistant' is relative and subjective and therefore unclear." Note that a heat-resistant thermoplastic resin has superior thermal stability, which can be measured by a standard method established by American Society For Testing and Materials (ASTM). See the original Specification, page 9, lines 6-7 and 16-21. Thus, Applicants submit that this term is clear and definite.

(2) According to the Examiner, "it is not clear what type of particle size is being cited in claim 2." Applicants have included the word "number" in claims 2 and 12. A skilled person in the art would understand that the term "average particle size" refers to "number average particle size."

(3) The Examiner asserted that "[i]t is not clear what is intended by the term 'graft rate' [in claim 3]." The term "graft rate" of a graft ABS polymer is defined as the weight of grafted monomers divided by the weight of rubber (i.e., conjugated diene rubber latex). See the original Specification, page 7, lines 18-19.

(4) According to the Examiner, "[t]he term 'antiadditive' and the term 'in a lump' as recited in at least claims 11, 12, and 14 are not art recognized in the context of the claim and therefore unclear." Applicants have replaced the term "antiadditive" recited in claim 11 with "lubricant," replaced the two phrases "adding in a lump" recited in claim 12 with "simultaneously introducing," and replaced the phrase "in a lump" recited in claim 14 with "simultaneously."

(5) The Examiner asserted that "[i]t is not clear what is intended by the phrase 'by adding' in at least claim 13 given that claim 13 does not recite to what material or process the 'by adding' takes place." Original claim 13 recites adding conjugated diene rubber latex, an aromatic vinyl compound, a vinyl cyanide compound, an emulsifier, a molecular weight controlling agent, and a polymerization initiator to a polymerization reactor. Applicants submit that the word "adding" is clear and no correction is required.

(6) According to the Examiner, "[c]laim [12] is unclear since it recites term 'ion exchange water' which is not art recognized and since it contains the phrase 'by increasing the particle'." Applicants have corrected both deficiencies.

(7) The Examiner pointed out that "[t]he 'molecular weight controlling agent' of claim 12 and claim 13 as well as claim 17 lacks antecedent basis ..." Applicants have corrected these deficiencies.

(8) The Examiner pointed out that "[t]he term 'polymerization initiator' as recited in at least claim 13 lacks antecedent basis ..." Applicants have corrected this deficiency.

For the reasons and facts set forth above, Applicants request withdrawal of this indefiniteness rejection.

Rejection/objection under 35 U.S.C. § 112, first paragraph

The Examiner asserted that "[c]laim 8 lacks antecedent basis in the specification given that the specification does not recite that the vinyl compound of [step] b) i)... may include styrene" and concluded that "[c]orrection is required." See the Office Action, page 2, lines 1-3[1]. Contrary to the Examiner's assertion, the original Specification explicitly states "a partition or total amount of styrene used in the preparation of heat resistant copolymer ..." See page 1, lines 25-26. Applicants submit that claim 8 is supported by the original Specification and no correction is needed.

The Examiner further pointed out that "the specification is replete with terms which are not clear, concise, and exact" and provided four examples. Specifically, the Examiner pointed out that the following four terms are unclear, inexact, or verbose: (1) heat-resistant, (2) adding in

[1] We assume that the Examiner rejected claim 8 under 35 U.S.C. § 112, first paragraph.

a lump, (3) method in a lump, and (4) welding process of the rubber latex. See the Office Action, page 2, lines 4-15.

Applicants have revised the specification to correct these deficiencies and respectfully traverse each example below:

Example (1): As discussed above, the thermal stability of a heat-resistant polymer can be measured by an ASTM method. Thus, Applicants submit that this term is clear and definite.

Examples (2) and (3): Applicants have replaced the phrase "adding in a lump," as well as similar phrases "method in a lump" and "in a lump," with "simultaneously introducing" or "simultaneously introduced."

Example (4): Applicants have replaced the word "welding," all occurrences, with "fusing," "fusion," or "fused."

The Examiner also pointed out that "applicants' claims contain grammatical errors and spelling errors" and provided seven examples. See the Office Action, page 2, line 15 to page 3, line 4. Applicants have corrected these deficiencies.

For the facts set forth above, Applicants request withdrawal of this rejection/objection.

Rejection under 35 U.S.C. § 102(b) and 35 U.S.C. § 103(a)

The Examiner rejected claims 1-17 under 35 U.S.C. § 102(b) and 35 U.S.C. § 103(a) on two different grounds. Applicants respectfully traverse each ground below:

I

The Examiner rejected claims 1-17 as being anticipated by, or as being obvious over Padwa et al., U.S. Patent 5,910,538 ("Padwa"). See the Office Action, page 5, lines 20-22.

Amended claim 1 is drawn to a method for preparing a thermoplastic resin composition having excellent heat resistance. The method includes (a) preparing a graft ABS polymer by emulsion polymerization of: (i) 40 to 70 wt parts of conjugated diene rubber latex, (ii) 15 to 40 wt parts of an aromatic vinyl compound, and (iii) 5 to 20 wt parts of a vinyl cyanide; (b) preparing a copolymer having excellent heat resistance by mass polymerization of: (i) 50 to 80 wt parts of an aromatic vinyl compound, and (ii) 20 to 50 wt parts of a vinyl cyanide, in which the mass polymerization is controlled so that the copolymer contains less than 15% of aromatic

vinyl-aromatic vinyl-aromatic vinyl chain structure; and (c) blending the graft ABS polymer and the copolymer.

The Examiner correctly pointed out that Padwa discloses "a blend of ABS and a 'compatibilizing agent'" and that the compatibilizing agent refers to "a copolymer prepared by mass polymerization using acrylonitrile and styrene." See the Office Action, page 5, lines 23-24 and page 6, lines 2-3. However, Padwa does not disclose or suggest a heat-resistant copolymer containing less than 15% of aromatic vinyl-aromatic vinyl-aromatic vinyl chain structure, which is required by claim 1[2]. Thus, claim 1 is not anticipated or rendered obvious by Padwa. As claims 2-18 depend from claim 1, they are also not anticipated or rendered obvious by Padwa.

Even if a *prima facie* case of obviousness has been made (which Applicants do not concede), it can be successfully rebutted by a showing of an unexpected advantage of a thermoplastic resin prepared by the method of amended claim 1. As an example, such a thermoplastic resin contains a heat resistant copolymer of α-methylstyrene (AMS; an aromatic vinyl compound) and acrylonitrile (AN; a vinyl cyanide). Example 2 and Comparative Example 4 of the Specification show that a thermoplastic resin containing an AMS-AN copolymer having less than 15% of AMS-AMS-AMS structure is thermally more stable than one containing an AMS-AN copolymer having 15% or more AMS-AMS-AMS structure. More specifically, Example 2 describes the preparation of a thermoplastic resin containing 38% ABS graft copolymer and 62% AMS-AN copolymer, in which the AMS-AN copolymer includes 4% AMS-AMS-AMS structure; and Comparative Example 4 describes the preparation of a thermoplastic resin containing the same components except that the AMS-AN copolymer includes 19% AMS-AMS-AMS structure. The resin prepared by the method of Example 2 has a thermal stability (index 1.8) superior to that of the resin prepared by the method of Comparative Example 4 (index 7.2). In view of this unexpected advantage, claim 1 is not rendered obvious by Padwa. Neither are claims 2-18, which depend from claim 1.

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[2]The compatibilizer disclosed in Padwa is used to improve energy absorption of a thermoplastic resin, rather than improve its thermal stability. See column 1, lines 25-28.

II

The Examiner rejected claims 1-17 as being anticipated by, or as being obvious over Leitz et al., U.S. Patent 5,605,963 ("Leitz"). See the Office Action, page 6, lines 16-18.

As mentioned above, amended claim 1 is drawn to a method for preparing a thermoplastic resin composition, which includes a copolymer having less than 15% of aromatic vinyl-aromatic vinyl-aromatic vinyl chain structure.

Leitz discloses an ABS polymer composition having polymers A, B, C, and D. The Examiner pointed out that in this ABS polymer composition, polymer A is "embraced by applicants' [ABS] graft polymer 'a' while patentee's polymer 'B' would appear to be embraced by applicants' heat resistant polymer ... Furthermore, applicants' component 'b' also embraces patentee's component 'C'." See the Office Action, page 6, line 19 to page 7, line 6. Applicants disagree. Indeed, polymer C of the composition disclosed in Leitz contains an aromatic vinyl component (e.g., α-methylstyrene) and a vinyl cyanide (e.g., acrylonitrile). However, similar to Padwa, Leitz does not disclose or suggest a heat-resistant copolymer containing less than 15% of aromatic vinyl-aromatic vinyl-aromatic vinyl chain structure required by claim 1. Thus, claim 1 is not anticipated or rendered obvious by Leitz. Neither are claims 2-18 dependent from it.

As discussed above, the Examiner's obviousness rejection can also be successfully rebutted by a showing of an unexpected advantage of a thermoplastic resin prepared by the method of claim 1. Thus, claim 1, as well as claim 2-18 dependent from it, is not rendered obvious by Leitz.

CONCLUSION

Applicants submit that the grounds for rejection asserted by the Examiner have been overcome, and that claims 1-17, as pending, define subject matter that is definite, novel, and non-obvious. On this basis, it is submitted that all claims are now in condition for allowance, an action of which is requested.

Please apply any other charges to deposit account 06-1050.

Respectfully submitted,

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Y. Rocky Tsao

Y. Rocky Tsao, Ph.D., J.D.
Attorney for Applicants
Reg. No. 34,053

Fish & Richardson P.C.
225 Franklin Street
Boston, MA 02110-2804
Telephone: (617) 542-5070
Facsimile: (617) 542-8906

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